

USSR

UDC 542.91 + 661.718.1

MALAKHOVA, I. G., TSVETKOV, YE. N., and KABACHNIK, M. I., Institute of Element-Organic Compounds, Academy of Sciences USSR

"m- and p-Carbethoxyphenyldichlorophosphines"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, Nov 70, pp 2602-2603

Abstract: m- and p-Carbethoxyphenyldichlorophosphines were synthesized by the reaction of m- and p-carbethoxyphenyldiazonium borofluorides with phosphorus trichloride in the presence of  $\text{Cu}_2\text{Br}_2$  with subsequent reduction of the resultant complex compounds with magnesium. For purification the carbethoxyphenyldichlorophosphines were hydrolyzed to the corresponding phosphonic acids, which after recrystallization were converted to the initial dichlorophosphines by the action of  $\text{PCl}_3$ . Oxidation of the dichlorophosphines with sulfuric acid in  $\text{CCl}_4$  gives corresponding m- and p-carbethoxyphenylphosphonic acid dichlorides.

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UDC 547.558.1

YAKOVLEVA, YE. A., ISAYEVA, G. G., MARCHENKOV, M. M., ZHURKOVA, A. K.,  
TSVETKOV, YE. M., KARACHNIK, M. I., and SEATEKSHIN, A. I., Physicochemical  
Institute imeni L. Ya. Karpov and Institute of Organoelemental Compounds,  
Academy of Sciences USSR

"Partial Rate Factors for Protophilic Deuteroexchange of Dimethylphosphine  
with Liquid Ammonia under Potassium Amide Catalysis"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 7, Jul 70, pp 1626-1631

Abstract: The authors undertook to determine the partial rate factors for  
deuteroexchange with liquid ammonia ( $\text{KHM}_2$  catalyst,  $25^\circ$ ) for all ring positions  
of dimethylphosphine. The deuterated dimethylphosphines were synthesized by the  
reaction of the corresponding organomagnesium compounds with dimethylphosphinic  
chloride and subsequent reduction of the resultant oxides with silicochloro-  
form. The structure of the isomers was confirmed by IR spectra. The partial  
rate factors were calculated on the basis of measurements of the dedeuteration  
reaction rate constants for dimethyl-o-m-, and p-deuterophenylphosphine.

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YAKOVLEVA, Ye. A., et al., Zhurnal Obshchey Khimii, Vol 40, No 7, Jul 70,  
pp 1626-1631

Approximate comparative data were also obtained on the protophilic dedeuteration rates for dimethyl-m- and p-trideuterotolylphosphines. The results indicated that the  $(CH_3)_2P$  group was an electron acceptor in the reaction of protophilic isotopic hydrogen exchange with a strong base.

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1/2 017  
UNCLASSIFIED  
PROCESSING DATE--11SEP70  
TITLE--NUCLEOPHILIC CONSTANTS OF SOME GROUPS CONTAINING PHOSPHORUS (V) -U-  
AUTHOR--TSVETKOV, YE.N., MAKHAMATKHANOV, M.M., LOBANOV, D.I., KABACHNIK,  
M.I.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (1), 178-80  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--OXIDATION, ORGANIC PHOSPHORUS COMPOUND, PHOSPHINE SULFIDE,  
POTENTIOMETRIC TITRATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRADE--1984/1667  
CIRC ACCESSION NO--AP0100271  
STEP NO--UR/0062/70/000/001/0178/0180  
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0100271

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. OXION. OF APPROPRIATE PHOSPHINES  
W/TH H SUB2 O SUB2 OR ADDN. OF S TO THESE GAVE THE FOLLOWING XC SUB6 H  
SUB4 OH (X, M.P., PKA AND HAMMETT SUBSTITUENT CONSTANT SHOWN, RESP.):  
P, ME SUB2 P (O), 188-9DEGREES, 8.45, 0.62; M, ME SUB2 P (O),  
165-6DEGREES, 8.90, 0.42; P, ME SUB2 P (S), 104-5DEGREES, 8.44, 0.62;  
M, ME SUB2 P (S), 69 TO 70DEGREES, 8.87, 0.43; P, ME SUB3 P (IODIDE SALT),  
248-9DEGREES, 7.55, 1.02; AND M, ME SUB3 P (IODIDE SALT), 219-20DEGREES,  
8.03, 0.81. THE PKA VALUES WERE OBTAINED POTENTIOMETRICALLY IN AQ.  
SOLN. THE SUBSTITUENT CONSTS. SIGMA PRIME NEGATIVE WERE CALCD. FROM PKA  
DATA BY THE CORRELATION EQUATION: PKA EQUALS 9.82 PLUS 2.217 SIGMA  
PRIME NEGATIVE. THE ABOVE X GROUPS ARE SOMEWHAT LESS EFFECTIVE AS POLAR  
SUBSTITUENTS THAN ARE THE ETO SUB2 C AND AC GROUPS.

UNCLASSIFIED

1/2 023  
UNCLASSIFIED  
TITLE--IONIZATION CONSTANTS FOR M AND P DIMETHYLPHOSPHINOPHENOLS -U-  
PROCESSING DATE--23OCT70  
AUTHOR--(04)-TSVETKOV, YE.N., MAKHAMTKHANDV, M.M., LOBANOV, D.I.,  
KABACHNIK, M.I.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. OBSHCH. KHIM. 1970, 40(2), 500-1  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--IONIZATION, ORGANIC PHOSPHORUS COMPOUND, PHENOL,  
POTENTIOMETRIC TITRATION, DEALKYLATION, ISOMER, MOLECULAR ORBITAL  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1995/1397  
STEP NO--UR/0079/70/040/002/0501/0500  
CIRC ACCESSION NO--AP0116844  
UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0116844

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DEALKYLATION OF ANISOLE ANALOGS WITH 48PERCENT HBR GAVE M ME SUB2 PC SUB6 H SUB4 OH.HBR, M. 142-3DEGREES, PKA SUB1 5.89, PKA SUB2 9.66; PARAISOMER, M. 214-15DEGREES, PKA SUB1 6.75, PKA SUB2 9.41. THE PKA VALUES WERE CALCD. FROM POTENTIOMETRIC TITRN. DATA AT 25DEGREES. THE PKA VALUES ARE COMPLEX OR MACROSCOPIC CONSTS. IN WHICH BETAIN FORMATION IS REGLIGIBLE IN THE META ISOMER BUT APPRECIABLE IN THE PARA ISOMER. THUS THE 1ST PKA REFERS TO LOSS OF PROTON FROM THE P ATOM, WHILE THE 2ND PKA COVERS THE IONIZATION OF THE HO GROUP. THE PKA SUB2 VALUES ARE BELIEVED TO REFLECT THE ELECTRONIC EFFECTS OF THE ME SUB2 P GROUP AND THE LARGER VALUE OF THE PARA ISOMER INDICATES THE ELECTRON ACCEPTOR NATURE OF THE ME SUB2 P GROUP OWING TO THE ABSENCE OR SMALLNESS OF THE P PI CONJUGATION AND THE EXISTENCE OF THE ACCEPTOR TYPE OF CONJUGATION WITH THE HIGHER VACANT ORBITALS IN P. FACILITY: INST. ELEMENTOORG. SUEDIN., MOSCOW, USSR.

UNCLASSIFIED

USSR

BORISOV, G., et al, Vysokomolekulyarnyye Soyedineniya, Vol XII, No 3, Mar 70, pp 620-625

The resultant polyesters in the fused state are semitransparent vitreous substances. After reprecipitation, the compounds are colorless or yellowish powders. Fibers may be drawn from the melts, and the solutions produce excellent films. They are soluble in chloroform, dimethylformamide, cresol, and nitrobenzene. It was found that the melting point of the polyester decreased with an increase in the number of methylene groups in the glycol. The polyesters are fairly heat resistant, losing from 4 to 20% of their total weight when heated to 300°C for 3 hrs. It was also found that the thermal stability of the polyester decreases with an increase in the number of methylene groups in the glycol. The polyester products adhere well to glass and metal surfaces and will not burn when removed from an open flame.

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UDC 546.18.181.1

TSVETKOV, YE. N., BORISOV, G., SIVRIEV, KH., MALEVANNAYA, R. A., and KABACHNIK, M. I., Institute of Organoelemental Compounds, Academy of Sciences USSR, and Institute of Organic Chemistry, Bulgarian Academy of Sciences, Sofia

"Syntheses Based on Tetramethylolphosphonium Chloride. Some Transformations of Tri(chloromethyl)phosphine and Methyl-di(chloromethyl)phosphine Oxide"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 2, Feb 70, pp 285-291

Abstract: The article describes some reactions of tri(chloromethyl)phosphine and a number of transformations of methyl-di(chloromethyl)phosphine oxide. Reactions of tri(chloromethyl)phosphine with water and with sodium acetate in glacial acetic acid are accompanied by a pseudoallyl rearrangement and yield methyl-di(chloromethyl)phosphine oxide and methyl-di(acetoxymethyl)phosphine oxide respectively. Tri(chloromethyl)phosphine reacts with sodium ethylmercaptide in the presence of an excess of ethyl mercaptan without a rearrangement to

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TSVETKOV, YE. N., et al., Zhurnal Obshchey Khimii, Vol 40, No 2, Feb 70, pp 285-291

give tri(ethylmercaptomethyl)phosphine. Substitution reactions were staged involving the displacement of chlorine atoms in methyldi(chloromethyl)phosphine oxide by dialkylamino, alkoxy, arylhydroxy and other groups.

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USSR

UDC: 547.26.118

MATROSOV, Ye. I., ~~TSVETKOV, Ye. N.~~, LOBANOV, D. I., MALEVANNAYA, R. A.,  
KABACHNIK, M. I., Institute of Organoelemental Compounds, Academy of Sciences  
of the USSR

"Association of Substituted Phosphinylbenzoic and Phosphinyl-p-toluic Acids  
According to the Data of Infrared Spectra"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 6, Jun 72, pp 1218-1223

Abstract: IR-spectroscopy was used to study the nature of association in  
carboxylic acids containing the phosphoryl group. The study specimens were  
chiefly certain phosphinylbenzoic  $R_2P(O)C_6H_4COOH$  and  $\alpha$ -phosphinyltoluic  
 $R_2P(O)CH_2C_6H_4COOH$  acids with various substituents at the phosphorus atom. It  
was shown that in the crystalline state association takes place principally  
through the formation of strong intermolecular H bonds with participation of  
the phosphoryl groups. A reduction in the basicity of the phosphorus substit-  
uent in the case of diphenylthiophosphinyl-substituted acids leads to dimeriza-  
tion on the carboxylic acid pattern. In chloroform, the polymer associates  
formed through the participation of phosphoryl groups in the H bonds are des-  
troyed, and dimer association becomes a predominant type. In proton-acceptor  
solvents (tetrahydrofuran, acetonitrile), molecules of free acids bound to the  
solvent by H bonds are observed in addition to the polymer associates.

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USSR

UDC 547.26'118

MARCHENKO, V. A., YAKUSHIN, F. S., TSVETKOV, YE. N., KABACHNIK, M. I., and  
SHATENSHTEYN, A. I.

"Effect of Solvating Organophosphorus Additives on the Kinetics of Protophilic  
Deutero Metabolism"

Leningrad, Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, pp 3-9

Abstract: A study was made of the kinetics of the reaction of deuterohydrogen  
metabolism of 9-D-fluorene with tertiarybutyl alcohol catalyzed with tertiary  
lithium butylate in the presence of additives of organophosphorus compounds  
with different substitutions on the phosphorus atom.

An analysis of the relation between the enthalpy and entropy of the  
activation of the reaction indicates the presence of two reaction series  
corresponding to different mechanisms of solvation of the alcoholate cation  
by additives with one and two electron donor centers. The efficiency of the  
organophosphorus compounds as sulfating agents in the given reaction depends  
to a great extent on the spatial factors. A linear relation was found between  
the values of  $\lg k$  ( $25^{\circ}$ ) and the values of  $H^{\ddagger}$  defined for the same solutions  
with which the kinetic measurements were performed. The indicator was CH-  
hydrogen exchange reaction.

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USSR

UDC 547.241

MATROSOV, YE. I., TSVETKOV, YE. N., MALEVANNAYA, R. A., and KABACHNIK, M. I.,  
Institute of Element Organic Compounds, Academy of Sciences USSR

"Infrared Spectra and the Association of Phosphinylacetic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 8, 1972, pp 1695-1700

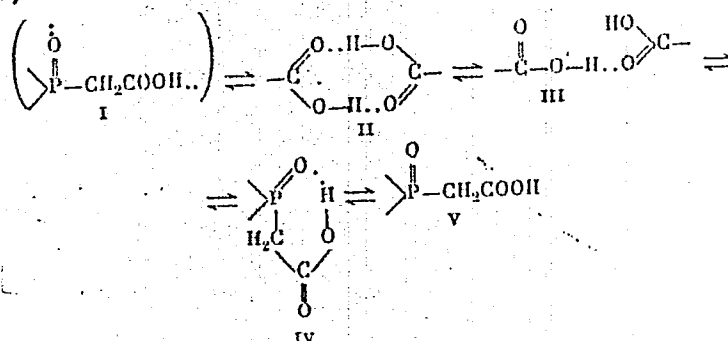
Abstract: Acids of the type  $\begin{matrix} A & O \\ & \diagup \quad \diagdown \\ & C \\ & \diagdown \quad \diagup \\ B & H-CH_2COOH \end{matrix}$  for the compounds A = B =  
Bu, Ph, p-CH<sub>3</sub>C<sub>6</sub>H<sub>4</sub>, p-ClC<sub>6</sub>H<sub>4</sub>, EtO, and PhO; A=Ph, B=Et; A=ISO Bu, A=Ph; A=EtO,  
B=Ph and A=OCH<sub>3</sub>, B=Ph -- were studied. Ir spectra were taken, using solid  
KBR pellets to examine the following types of associations which normally  
occur in solution;

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MATROSOV, YE. I., et al., Zhurnal Obshchey Khimii, Vol 42(104), No 8, 1972, pp 1695-1700



In solution the dominant form depends on the groups attached to the P atom and on the solvent. In proton-acceptor solvents, the acid forms H bonds with the solvent. Forms (II) and (V) predominate in inert solvents. In the solids the acids associate due to the formation of intermolecular hydrogen bonds involving parts of the phosphoryl group.

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USSR

UDC 624.07:534.1

GORLACH, B. A., TSVETKOV, Yu. D.

"Determining the Work in the Crumpling of a Spherical Shell"

V sb. Raschet prostranstv. sistem v stroit. mekh. (Calculation of Three-Dimensional Systems in Structural Mechanics -- Collection of Works), Saratov, Saratov University, 1972, pp 72-76 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V304)

Translation: The problem of determining the work in the crumpling of a hemisphere is solved experimentally and theoretically. A functional relationship is established between the parameters characterizing the crumpling on the basis of a series of experiments with shells having varying geometry and made of different materials. The application of the similarity and dimensionality theories under the appropriate selection of these parameters made it possible to lower the number of parameters involved in the construction of the functional relationship from seven to five. The dimensionless compression force was selected as a function in the functional relationship. The work of the external forces was determined as the integral of the force

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GORLACH, B. A., TSVETKOV, Yu. D., Raschet prostranstv. sistem v stroit. mekh., Saratov, Saratov University, 1972, pp 72-76

along the displacement of the shell from zero to the maximum bend. The theoretical method for determining the work was based on the inverse method of solving problems in elasticity theory. Two functions for the components of the displacement vector  $u_1$  and  $u_2$  were selected in such a way that they did not contradict the experimental data. The components of the deformation tensor were expressed in terms of the components of the displacement vector. By assuming the components of the stress vector linearly dependent on the deformation tensor component (which is supported by experiment), the authors determined the work of stresses in the shell in the corresponding deformations. A comparative analysis of the results obtained by the two methods showed their good agreement. V. B. Silkin.

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1/2 013  
UNCLASSIFIED  
PROCESSING DATE--20NOV70  
TITLE--THE NINTH INTERNATIONAL SYMPOSIUM ON FREE RADICALS -U-  
AUTHOR--TSVETKOV, YU.D.  
COUNTRY OF INFO--USSR, CANADA  
SOURCE--MOSCOW, VESTNIK AKADEMII NAUK SSSR, RUSSIAN, VOL 40, NO 1, JANUARY  
1970, PP 83-85  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, BEHAVIORAL AND SOCIAL SCIENCES  
TOPIC TAGS--FREE RADICAL, SPECTROSCOPY, INTERNATIONAL CONFERENCE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3005/0019  
STEP NO--UR/0030/70/040/001/0083/0085  
CIRC ACCESSION NO--AP0132319  
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--20NOV70

2/2 013

CIRC ACCESSION NO--AP0132319  
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE NINTH INTERNATIONAL SYMPOSIUM  
ON FREE RADICALS WAS HELD ON 24-29 AUGUST IN BANFF, ALBERTA, CANADA.  
PARTICIPATING IN ITS WORK WERE 112 SCIENTISTS FROM 13 COUNTRIES. THE  
NATIONAL ORGANIZING COMMITTEE DEDICATED THE SYMPOSIUM TO THE WELL KNOWN  
CANADIAN SCIENTIST H. HERTZBERG, WHOSE SERVICES IN THE AREA OF  
SPECTROSCOPY, AND IN PARTICULAR THE SPECTROSCOPY OF FREE RADICALS, HAVE  
RECEIVED WORLDWIDE RECOGNITION.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--ELECTRON, SPIN, ECHO STUDY OF THE SPATIAL DISTRIBUTION OF RADICALS  
DURING ALPHA AND GAMMA RADIOLYSIS OF METHANOL AND AN AQUEOUS SULFURIC  
AUTHOR--(03)-RAITSIMRING, A.M., MORALEV, V.M., TSVETKOV, YU.D.  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. VYS. ENERG. 1970, 4(2), 180-2  
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY  
TOPIC TAGS--ELECTRON SPIN, RADIOLYSIS, METHANOL, SULFURIC ACID, POLONIUM,  
ALPHA PARTICLE, GAMMA RADIATION, FREE RADICAL, COBALT ISOTOPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1997/0753

STEP NO--UR/0456/70/004/002/0180/0182

CIRC ACCESSION NO--AP0119660

UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119660

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PRIME210 PO ALPHA PARTICLE AND PRIME60 CO GAMMA RADIATION RADIOLYSIS WAS STUDIED OF THE GLASS LIKE 8M H SUB2 SO SUB4 SOLID AQ. SOLN. AND OF CRYST. MEQH AT 77DEGREESK. LOCAL RADICAL CONCNS. WERE DETD. BY USING THE 2,IMPULSE ELECTRON. SPIN,ECHO METHOD. THE SAME RADICALS OR ATOMS WERE FOUND IN BOTH THE ALPHA AND GAMMA IRRADIATED SYSTEMS, NAMELY CH SUB2 OH WITH MEQH AND H AS WELL AS SO SUB4 PRIME NEGATIVE WITH H SUB2 SO SUB4. THE RELAXATION RATE INCREASED LINEARLY WITH INCREASING MEAN RADICAL CONCNS. IN THE GAMMA IRRADN., THE SLOPE OF THE STRAIGHT LINE INDICATING A REGULAR RADICAL DISTRIBUTION. NO CHANGE OF THE RELAXATION RATE AT VARYING MEAN RADICAL CONCNS. WAS OBSD. IN THE ALPHA IRRADN. THIS WAS EXPLAINED BY ASSUMING THAT RADICALS ARE STABILIZED ALONG THE ALPHA,TRACK AND AUGMENTED LOCAL RADICAL CONCNS. ARE ATTAINED IN SOME REGIONS; NO SIGNIFICANT DIPOLE MAGNETIC INTERACTION BETWEEN RADICALS SITUATED IN SINGLE REGIONS IS EXPECTED TO OCCUR. THE RADII OF SUCH REGIONS, WHICH ARE PRESUMABLY CYLINDRICAL, ARE 130, 105, AND 55 A AND THE MEAN DISTANCES ARE 30, 35, AND 26 A WITH CH SUB2 OH, H, AND SO SUB4 PRIME NEGATIVE, RESP. FACILITY: INST. KHIM. KINET. GURENIVA, NOVOSIBIRSK, USSR.

UNCLASSIFIED

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USSR

UDC 621.791.3:669.715+669.14.018.8

KOBYLYANSKIY, I. F., KONONENKO, Yu. F., GUSEV, V. R., TSVETKOV, Yu. F.,  
OSIPOVA, K. Ya., LEPANOV, N. S., and CHULKOV, Ye. I., Engineers

"Soldering of Aluminum and Its Alloys With Stainless Steel"

Moscow, Svarochnoye Proizvodstvo, No 11, Nov 70, pp 41-44

Abstract: A method has been developed for fluxless soldering allowing firm attachment of aluminum and its alloys to steel for parts and units working at temperatures up to 400°C. The hypoeutectoid alloy produced during soldering greatly limits the formation and growth of the intermetallide layer around the soldered joint due to the high heating rate to 640°C and low force of external clamping of the parts being connected (1 kg/cm<sup>2</sup>).

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USSR

UDC 541.183

SVETLOV, A. K., DEMENKOVA, T. N., TSVETKOV, YU. S., NESTEROVA, O. M., and  
KRYUCHKOV, V. V., Kuzbas Polytechnical Institute

"The Effect of the Structure of Ion Exchange Resin on the Process of Ion  
Exchange Sorption"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 46, No 10, Oct 72, pp 2596-2598

Abstract: The effect of the structure of ion exchange resins on the process  
of dye sorption in aqueous and organic media has been investigated. It was  
shown that the maximum adsorption value is obtained in monoporous samples with  
total pore volume of 0.8 cm<sup>3</sup>/g, and individual pore dimensions of 4.5-5.5 lg req,  
due to uniform accessibility of the granular structure. Maximum adsorption of  
rhodamine 6Zh by the cation exchange resin KU-2 occurs in acetone solution;  
sodium eosine is most effectively absorbed by the anion exchange resin AV-17  
from aqueous solutions. It has been noted that the anion exchange resin AV-17  
in the OH form shows a higher sorptive ability than in the chloride form.

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TSVETKOV, V.

METALLURGY

56RS 6/321 20 Est. 74

LOW-TEMPERATURE PLASMA AND METAL REDUCING PROCESSES

U.S.S.R.

(Article by M. V. Tsvetkov, S. A. Panfilov, N. A. Pankov, P. A. Pankov, P. A. Pankov  
V. Metallurgii i Tekhnologii Metalloobrabotki, Moscow, 1973,  
 pp 207-214)

Interest in using low-temperature plasma as a source of heat and as a chemically active medium for solving problems of metallurgical technology has increased during metallurgical processes in recent years. The number of research organizations that are working on problems of plasma metallurgy has increased, both in the USSR and abroad. The number of publications, patents and copyrights related to this field is steadily increasing. Various plasma methods have been proposed: for producing metals in powder and compact form by reducing their compounds, for producing oxides, carbides and nitrides of metals, for thermal decomposition of ores, plasma reheating of metals and alloys, etc. [1, 2, 3]. Unfortunately, many of the metallurgical processes that have been tried under laboratory conditions have not yet gained industrial acceptance. The reasons for this are, on the one hand, the insufficient development of plasma technology as a whole and, on the other hand, the insufficient development of technology, to which is attached particularly great importance under the specific conditions of high-temperature high-speed processes. These include dosing, mixing, hardening, evacuation products from the reactor, etc. Theoretical problems that are of great practical importance and which require solutions are the kinetics of plasma chemical reactions, problems of heat- and mass exchange, theory of condensation and coagulation. It may be said at this very time that there is an independent field of metallurgy is developing, oriented toward the utilization of low-temperature plasma.

The number of studies that have been done in the field of plasma metallurgy is evidence that efforts are being made to use plasma in most metallurgical processes. Such a broad approach carries the risk of the loss of perspective. The correct orientation requires careful evaluation of the advantages that plasma heating has over other heat sources, and a clearer understanding of the reasons for using low-temperature plasma to solve metallurgical problems.

(2)

Powder Metallurg,

UDC 621.762.2.001:669.849

USSR

CHIZHIKOV, D. M., TSVETKOV, Yu. V., and RATNER, Yu. Ye.

"Kinetics of Reduction of Ammonium Perrhenate and Certain Properties of Rhenium Powder"

Metallurgiya reniya [The Metallurgy of Rhenium -- collection of works], Moscow, Nauka Press, 1970, pp. 116-119, (Translated from Referativnyy Zhurnal-Metallurgiya, No. 2, 1971, Abstract No. 2 G383 by the authors)

Translation: Metallic Re is produced by reduction of ammonium perrhenate with hydrogen. Therefore, the study of the kinetics of this process is not only of theoretical, but also of practical significance. It is established that the kinetics of the process follow the Roginskiy-Schultz equation. The intermediate products and metallic rhenium are formed in the process of reduction in the roentgenoamorphous state. It is believed that amorphous Re trioxide is formed as an intermediate product of the reduction of ammonium perrhenate. The influence of the conditions of the process (temperature, concentration of water vapor in the gas medium) on the particle size and purity of the metallic Re is studied. High-purity metallic Re is produced, in which the impurity content is 1-2 orders of magnitude lower than permitted according to the technical conditions. 3 figures; 1 table; 4 biblio. refs.

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USSR

UDC 632.95:634.11

BABIY, V. S., and TSVETKOVA, A. G., All Union Scientific Research Institute  
of Biological Methods of Plant Protection

"Reaction of the Apple Trees Towards Various Concentrations of Pesticides  
Used in Small Volume Spraying"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 10, No 7 (105), 1972, pp 31-33

Abstract: In small volume spraying the concentration of pesticides may be lowered by 25% without decreasing its technical effectiveness. The study was carried out on apple trees. Pesticides protecting these trees from pests and diseases had a positive effect on general state of apple trees: their chlorophyll content was higher, water content increased somewhat; the oxidation reduction processes remained unaffected. Lowering of the pesticide concentration also decreased the cost of tree protection.

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USSR

UDC 615.216.5:(547.586+547.581.2

ABRAMOV, A. P., CHELIMOV, A. P., SUTSKOVA, N. V., KOSYCHENKO, D. A.,  
TSVETKOVA, G. I., and KRYZANOV, N. I., Scientific Research Institute of  
Pharmacology, Acad. Med. Sci. USSR, Moscow, I Moscow Medical Institute Interni  
I. K. Skochkov

"Curariform Activity of the Homologous Salts Containing the Adamantyl  
Radical in the Nitrogen Atom"

Moscow, Zhurnal Khimicheskoi Farmatsii, Vol 6, No 4, Apr 78, pp 8-13

Abstract: A series of modifications of all homologs of benzoic and cinnamic  
acids has been conducted in an attempt to lower the curariform neurovascular  
blocking activity of the parent compound. Replacing a methyl group at the  
nitrogen atom with an isobutyl group did not change the depolarizing  
blocking of skeletal muscles or depolarizing activity; at the same time the  
curariform activity decreased 100-300 fold. Changes in the length of the alkyl  
radical branches on the nitrogen atom and other substituents on the  
aromatic ring did not change the activity. The reduction was due to the  
change in the spatial arrangement of the molecule. It is assumed that this  
activity is determined by the spatial arrangement of the molecule in the  
active site of the receptor.

1/2 018 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--CHANGES IN THE ULTRASTRUCTURE OF EPIDERMIS IN PSORIASIS -U-  
AUTHOR--(03)-TSVETKOVA, G.M., GETLING, Z.M., CHISTYAKOVA, I.A.  
COUNTRY OF INFO--USSR  
SOURCE--VESTNIK DERMATOLOGII I VENEROLOGII, 1970, NR 5, PP 13-17  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--SKIN DISEASE, BIOPSY, DIAGNOSTIC MEDICINE  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1998/0689 STEP NO--UR/0206/70/000/005/0013/0017  
CIRC ACCESSION NO--AP0121350  
UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121350

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PAPER PRESENTS THE RESULTS OF INVESTIGATION OF THE ULTRASTRUCTURE OF EPIDERMIS IN DIFFERENT PERIODS AND FORMS OF PSORIASIS (STATIONARY AND PROGRESSING PERIODS, AS WELL AS IN PSORIATIC ERYTHRODERMIA). BIOPSIES OF THE SKIN IN THE AREA OF PSORIATIC ELEMENTS FROM 10 PATIENTS AT THE AGE OF 21 TO 50 YEARS WERE STUDIED. THE STUDIES INDICATED THAT DEVELOPMENT OF PSORIATIC ELEMENTS WAS BASED ON INCREASED FUNCTIONAL ACTIVITY OF EPIDERMIS CELLS ACCOMPANIED BY DISTURBANCES IN OXIDATIVE PROCESSES AND PHENOMENA OF KERATINIZATION. HYPOXIC STATES ARE CONFIRMED BY THE PRESENCE OF DYSTROPHIC AND DESTRUCTIVE CHANGES IN EPIDERMIS CELLS AND SIGNS OF EDEMA. FACILITY: OTDELY PATOMORFOLOGII I DERMATOLOGII TSENTRAL'NOGO N-I KCZHNO-VENEROLOGICHESKOGO INSTITUTA MINISTERSTVA ZDRAVOOKHRANEN. SSSR, MOSCOW.

UNCLASSIFIED

1/2 031 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--THE DYNAMICS OF HISTOCHEMICAL CHANGES IN THE SKIN IN DIFFERENT  
STAGES OF ECZEMA -U-  
AUTHOR-(02)-TSVETKOVA, G.M., NOVIKOVA, N.F.  
COUNTRY OF INFO--USSR  
SOURCE--VESTNIK DERMATOLOGII I VENEROLOGII, 1970, NR 3, PP 13-17  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--HISTOCHEMISTRY, SKIN DISEASE, METABOLISM, ENZYME ACTIVITY  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1985/1491 STEP NO--UR/0206/70/000/003/0013/0017  
CIRC ACCESSION NO--AP0101575  
UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0101575

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF HISTOCHEMICAL CHANGES IN THE SKIN AT DIFFERENT STAGES OF ECZEMA DYNAMICALLY (15 OBSERVATIONS) SHOWED THE PATHOLOGICAL PROCESS TO BE UNDERLIED BY PROFOUND METABOLIC DISORDERS ACCOMPANIED BY HYPGXV OF CELL ELEMENTS PARTICULARLY IN THE ACUTE STAGE OF THE DISEASE. THE LATTER IS CONFIRMED BY A REDUCTION IN THE ACTIVITY OF ENZYMES CATALYSING BIOLOGICAL OXIDATION, AS WELL AS BY A REDUCTION IN THE ACTIVITY OF CELL ELEMENTS BOTH OF EPIDERMIC AND DERMA. THIS ACCOMPANIED BY DISORDERS IN PERMEABILITY OF THE BLOOD VESSELS OF THE SKIN AND INCREASED FUNCTION OF THE MAST CELLS.

UNCLASSIFIED

USSR

UDC 548.52

BEREZHKOVA, G. V., ~~TSVETKOVA, I. N.~~, ZAKHAROV, N. D., ROZHANSKIY, V. N.,  
and KORYUKIN, V. I., Institute of Crystallography, Academy of Sciences USSR

"Growth Mechanisms of AlN Whiskers"

Moscow, Kristallografiya, Vol 16, No 5, Sep-Oct 71, pp 978-981

Abstract: The article describes results of a study of AlN whisker growth under isothermal conditions during the reduction of aluminum oxide with simultaneous nitration. The whiskers were grown in a horizontal graphite furnace in a flow of commercial nitrogen from an  $Al_2O_3$  charge at 1950-1980° C. The resultant specimens were studied in a scanning and a transmission electron microscope and their brittle strength measured at room temperature. The results indicate both top growth from the vapor phase and bottom growth from the melt. In neither case is the presence of an axial screw dislocation a necessary condition for crystallization in whisker form. The article discusses possible growth mechanisms.

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USSR

UDC 577.11

TSVETKOVA, I. V., GRIKOVA, N. V., and LIPKIND, M. A., Institute of Biological and Medical Chemistry, USSR Academy of Medical Sciences, Moscow, D. I. Ivanovskiy Institute of Virology, USSR Academy of Medical Sciences, Moscow, and Moscow Academy of Veterinary Medicine

"Effect of Detergents on the Activity of Functional Viral Proteins and on Their Distribution in Organelles of Virus-Infected Cells"

Moscow, Biokhimiya, No 4, 1973, pp 771-778

Abstract: The activity of neuraminidase and hemagglutinin in chick embryo fibroblasts infected with Newcastle disease virus was studied in cell homogenates treated with Tween 80, Triton X-100, and other detergents (sodium dodecylsulfate, sodium desoxycholeate, digitonin). Tween 80 and Triton X-100 increased the activity of the proteins and redistributed it among the cell organelles. Their activity shifted to the lighter fractions, particularly the "cell juice" where both neuraminidase and hemagglutinin were practically absent when the homogenate not treated with a detergent was absent. Treatment with Triton X-100 caused a greater increase in the activity of the homogenate

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USSR

TSVETKOVA, I. V., et al., Biokhimiya, No 4, 1973, pp 771-778

and a more pronounced shift of the proteins to the cell juice. Treatment with Tween 80 did not increase the activity of the homogenate as much and "shifted" it mainly to the mitochondrial-microsomal and ribosomal fractions.

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USSR

UDC 576.858.75(A2). 098.31

TSVETKOVA, I. V. and LIPKIND, M. A., Institute of Biological and Medical Chemistry and Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR

"An Attempt to Obtain Direct Proof of the Enzymatic (Neuraminidase) Nature of the Process of "Unmasking" Latent Hemagglutinin in Influenza A2 Virus"

Moscow, Voprosy Virusologii, No 4, Jul/Aug 70, pp 409-414

Abstract: An attempt was made to find direct evidence of a relationship between the "unmasking" of latent hemagglutinin and neuraminidase activity in influenza A2 virus. It was hypothesized that if the "unmasking" process, i.e., the breakdown of the virus-inhibitor complex, occurs under the influence of viral neuraminic acid should accumulate in the system where the hemagglutinin titer of the virus (Kop strain) increases spontaneously. In the case of the inhibitor-sensitive Bar strain, on the other hand, there should be no such accumulation. When the allantoic fluid of 13-day-old chick embryos was infected with the two influenza strains, however, the content of neuraminic acid increased by 70.7% and 43.5% in fluid inoculated with inhibitor-resistant Kop strain and inhibitor-sensitive Bar strain, respectively. During storage of the virus-containing allantoic fluids, accompanied

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TSVETKOVA, I. V., et al, Voprosy Virusologii, No 4, Jul/Aug 70, pp 409-414

by a spontaneous increase in the hemagglutinin titer of the inhibitor-resistant strain, no statistically significant accumulation of neuraminic acid was exhibited. Thus, no direct evidence of the neuraminidase nature of the "unmasking" process could be obtained.

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1/2 019  
UNCLASSIFIED  
TITLE--CULTIVATION OF PLANTS IN CLOSED BIOLOGICAL CYCLES WITH THE USE OF  
KERAMSIT -U- PROCESSING DATE--30OCT70  
AUTHOR-(03)-TSVETKOVA, I.V., ZAMOTA, V.P., MAKSIMOVA, E.V.  
COUNTRY OF INFO--USSR  
SOURCE--KOSMICHESKAIA BIOLOGIIA I MEDITSINA, VOL 4, JAN. FEB. 1970, P.  
11-15  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--CLOSED ECOLOGY SYSTEM, HYDROPONICS, PLANT CHEMISTRY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1997/0066 STEP NO--UR/0453/70/004/000/0011/0015  
CIRC ACCESSION NO--AP0119062  
UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0119062

ABSTRACT/EXTRACT--(U) CP-0- ABSTRACT. DESCRIPTION OF EXPERIMENTS IN PLANT GROWING BY THE HYDROPONIC METHOD USING A POROUS ALUMOFERRISILICATE AS THE SOLID SUBSTRATE. IT IS FOUND THAT SUBSTANTIAL CHANGES OCCUR IN THE CHEMICAL COMPOSITION OF THIS MATERIAL AFTER IT HAS BEEN USED FOUR TIMES REPEATEDLY IN BIOLOGICAL CYCLES. IT IS FURTHER FOUND THAT IT UNDERGOES A DECOMPOSITION INVOLVING THE SEPARATION OF ELEMENTS INCLUDING ALUMINUM INTO THE NUTRIENT SOLUTION WHEN IT IS USED REPEATEDLY FOR A LONG PERIOD OF TIME. THIS REDUCES THE YIELD OF THE PLANTS AND CHANGES ADVERSELY THE CHEMICAL COMPOSITION OF THEIR GREEN MASS.

UNCLASSIFIED

TSVETKOVA, M.V.

RND / 1 R-966 / 5-1111-73  
 Dec 1973  
 17

V. HIGH-SPEED FLOW PAST BODIES

Dermenov, V. Ya., and P. I. Gorenbutk.  
Application of a nonstationary analogy to  
an investigation of explosive wave effects  
on an obstacle in a hypersonic tunnel.  
 Uchenyye zapiski Tsentral'nogo aero-  
 dinamicheskogo instituta, v. 2, no. 6,  
 1971, 48-54. (RZhMekh, 5/72, no. 5V282)

The results are presented of an experimental investigation of shock wave interaction from a blunt body (a plate with a blunt leading edge), with a solid boundary (a plate with a sharp leading edge), in a helium stream at  $M = 23$  to 27. The pressure distribution around the plate with the sharp leading edge behind the incident shock wave is given. By means of a detonation analogy, the results obtained are used to analyze the effect of a plane shock wave on a two-dimensional barrier. It is shown that in this case the experimental results agreed with the calculated data. Counterpressure was not taken into account during the tests.

Tsvetkova, M. V. Characteristics of supersonic  
flow around blunt bodies under conditions of  
intensive injection. In: Trudy II Respublikanskoy  
 konferentsii po aerogidromekhanike, teplotobmenu  
 i massoobmenu. Sektsiya "Aerodinamika bol'shikh  
 skorostey", Kiyev, Kiyevskiy universitet, 1971,  
 112-115. (RZhMekh, 5/72, no. 5D415)

Results are presented of experimental research on the effect of air injection through a permeable body surface on the position and

USSR

UDC: 629.19:533.6

TSVETKOVA, M. V.

"Particulars of Supersonic Flow Around Blunt Bodies Under Conditions of Intensive Injection"

Tr. II Resp. konf. po aerogidromekh., teploobmenu i massoobmenu. Sekts. "Aerodinamika bol'sh. skorostey" (Works of the Second Republic Conference on Aerohydromechanics, Heat Exchange and Mass Exchange. "High-Velocity Aerodynamics" Section), Kiev, Kiev University, 1971, pp 112-115 (from RZh-Mekhanika, No 5, May 72, Abstract No 5B415)

Translation: The paper presents the results of experimental research on the effect which air blown into an external flow through the permeable surface of a body has on the position and shape of the shock wave, the distribution of pressure over the surface, and the wave drag of the body. The studies were done on a spherically blunted cylinder and a blunt cone with a break in the generatrix. The porosity of the surface was 60%, the Mach number ranged from 3 to 5, and the relative rate of flow of the blown-in gas varied from 0 to 1.0. Two modes were established in the course of the experiment: a mode with moderate injection intensity (relative flowrate less than 0.2)

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USSR

TSVETKOVA, M. V., Tr. II Resp. konf. po aerogidromekh., teploobmenu i mas-soobmenu. Sekts. "Aerodinamika bol'sh. skorostey", Kiev, Kiev University, 1971, pp 112-115

and a mode of "strong" injection (relative flowrate higher than 0.2). In the first mode of flow, an abrupt change in flow characteristics takes place with an increase in flowrate (increased drag, and drift and increase of the angle of inclination of the shock wave). In this case flow may be calculated in accordance with boundary layer theory with regard to viscous interaction. The "strong" injection mode is characterized by the presence of a region of "blow-off" of the boundary layer near the wall. The flow parameters in this case cannot be determined in accordance with boundary layer theory. V. I. Kholyavko.

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USSR

UDC 533.6.05

TSVETKOVA, M. V.

"The Flow Character by Intensive Injection Through a Permeable Surface"

Kazan', IVUZ Aviatsionnaya Tekhnika, No 4, 1971, pp 110-113

Abstract : The flow character by intensive injection through a permeable surface was experimentally investigated in a supersonic wind tunnel on two model types, a cylinder with spherical bluntness and a blunt cone with generatrix break. The comparison of experimental results with data of other authors signifies that the flow in the near-wall zone is characterized by the aerodynamic injection parameter  $(g\bar{V})$ . Values of  $(g\bar{V}) \leq 0.2$  specify problems with a moderate intensity of injection which can be solved according to the boundary layer theory. Values of  $(g\bar{V}) > 0.2$  specify problems with intensive injection with blowing off of the boundary layer from the permeable surface. In the latter case, a calculation method has to be applied which considers the interaction of blown in and external flows. One illustr., four biblio. refs.

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1/2 020 UNCLASSIFIED PROCESSING DATE--11DEC70  
TITLE--VASCULAR PATHOLOGY -U-  
AUTHOR--(03)-ZAKHAROVA, G., FROLOV, YE., TSVETKOVA, N.  
COUNTRY OF INFO--USSR  
SOURCE--NEDITSINSKAYA GAZETA, OCTOBER 2, 1970, P 3, COLS 1-4  
DATE PUBLISHED--02OCT70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--CARDIOVASCULAR SYSTEM, SURGERY, MEDICAL FACILITY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY FICHE NO-----FD70/605038/B09 STEP NO--UR/9034/70/000/000/0003/0003  
CIRC ACCESSION NO--AN0142472  
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--11DECT

CIRC ACCESSION NO--AN0142472

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE REVIEWS THE FUNCTIONS OF THE CLINIC OF HOSPITAL SURGERY OF THE SARATOV MEDICAL INSTITUTE, WHICH IN THE COURSE OF THE LAST 15 YEARS SERVED AS A CENTER FOR TREATING PATIENTS WITH DAMAGED OR DISEASED VESSELS OF EXTREMITIES. A SPECIAL DEPARTMENT WAS ESTABLISHED IN 1968 FOR TREATING PATIENTS WITH AFFLICTED PERIPHERAL VESSELS. THE DEPARTMENT OPERATES A FUNCTIONAL DIAGNOSTICS LABORATORY, DOES BIOCHEMICAL ANALYSIS, AND RUNS CHECKS OF THE PHYSICAL PROPERTIES OF BLOOD WHICH IS IMPORTANT FOR OPERATIONAL AND POSTOPERATIONAL PERIODS. THE ASSOCIATES OF THE CHAIR OF HOSPITAL SURGERY HAVE BEEN EXPLORING FOR MANY YEARS THE PROBLEMS IN DIAGNOSTICS, PATHOGENESIS AND TREATMENT OF OBLITERATING "ENDARTHERIETE". THE RESULTS AND THE RECOMMENDED TREATMENTS ARE DESCRIBED. ANOTHER SUBJECT, THE RECONSTRUCTION SURGERY OF VESSELS, HAS BEEN UNDER STUDY FOR THE LAST TEN YEARS. THE EXPERIENCE IN SURGICAL TREATMENT OF PATIENTS WITH PATHOLOGICAL AND DAMAGED VESSELS OF EXTREMITIES HAS MADE IT POSSIBLE TO START WORK IN OTHER AREAS OF VASCULAR SURGERY. FACILITY: HEAD OF THE CHAIR OF HOSPITAL SURGERY OF THE SARATOV MEDICAL INSTITUTE, SMCLN. FACILITY: HEAD OF THE VASCULAR DEPARTMENT OF THE CLINIC, SMCLN. FACILITY: REGIONAL DEPARTMENT OF PUBLIC HEALTH.

UNCLASSIFIED

1/2 030  
UNCLASSIFIED  
TITLE--MECHANISM OF THE THOROUGH COMBUSTION OF IMPURITIES DURING THE  
PROCESSING DATE--23OCT70  
GROWING OF CORUNDUM CRYSTALS IN A HYDROGEN OXYGEN FLAME -U-  
AUTHOR--(02)-VOLYNETS, F.K., TSVETKOVA, N.A.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(2), 271-5  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, PHYSICS  
TOPIC TAGS--CRYSTAL GROWING, CORUNDUM, FLAME, THERMAL OXIDATION, CRYSTAL  
IMPURITY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1987/1998  
STEP NO--UR/0363/70/005/002/0271/0275  
CIRC ACCESSION NO--AP0105072  
UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0105072

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROCESS OF THOROUGH BURNING  
OUT OF OXIDES OF V, Y, AND GA, WHICH DIFFER IN THEIR THERMODYNAMIC  
CHARACTERISTICS, FROM ALUMINA DURING THE GROWTH OF CORUNDUM CRYSTALS IN  
A H-O FLAME WAS INVESTIGATED EXPTL. THE DEGREE OF BURN OUT OF THE  
IMPURITIES POINTS TO THE SIGNIFICANT ROLE OF THE GRADIENTS OF THE OXIDN.  
REDN. POTENTIAL OF THE FLAME JET.

UNCLASSIFIED

USSR

UDC 632.951

KUKHTA, Ye. P., MASHCHENKO, N. D., FOROSTYAN, Yu. N., and TSVETOVA, N. T.,  
Crimean Agricultural Institute

"The Toxicity of a Number of New Amides of Phosphoric Acids for the Crimean  
Grape Snout Beetle"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 10, No 6, 1972, pp 40-43

Abstract: Laboratory and field tests were conducted to determine the toxicity of the new amides in comparison with known insecticides. In the laboratory test 50 beetles were placed in each of a number of Petri dishes, grape leaves were added for feed, then the insecticide being tested was applied in recommended concentrations. During the experiment the Petri dishes were placed in a cupboard with forced ventilation, to remove any fumigating effect. The temperature was maintained at 20-22° C and the humidity at 70-80%. In the laboratory tests the preparations gardona, cidial and metaphosphate of known insecticides, and the new compounds KF-4, KF-3 and KF-2 proved most effective. In the field tests the best results were obtained with cidial, metaphosphate, metathion, and the new compound KF-4. Dead beetles from each test were pulverized in porcelain crucibles and insecticide residue was collected along with other elements. Evidence of the precise action of the insecticides and the formation of choline was also found by this method.

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USSR

UDC 619:616.988.43-084.47

SYUSYUKIN, A. A., KRAVETS, I. K., ~~TSVETKOVA, N. Ye.~~ and PAVLOV, V. G.,  
All-Union Scientific Research Institute of Food-and-Mouth Disease

"Immunogenic Properties of an Experimental Food-and-Mouth Disease Vaccine

Moscow, Veterinariya, No 5, May 71, pp 40-42

Abstract: The results of a study of the immunogenic character of an inactivated vaccine prepared from foot-and-mouth disease virus A<sub>22</sub>, strain 663, grown in BNK cells, are reported. Virus from the 6-7th and 102-103 passages was used in the form of a centrifuged cultural liquid. The vaccine used consisted of virus (50%), a 6% solution of aluminum hydroxide (40%), and glycine (10%). After adsorption of the virus, the pH of the mixture was adjusted with glycine buffer to 8.6-8.8, and formalin was added at a final concentration of 0.05%. The virus was inactivated for 48 hrs at 20°C. After the inactivation, glycerin was added, and in some series, saponin. The vaccine was tested in cattle and guinea pigs. It was found that all six test vaccines had high immunogenic properties. In five test vaccines, the LD<sub>50</sub> for guinea pigs was 0.15-0.19 ml, and only in one test vaccine was it 0.26 ml. Inactivated vaccines with saponin (2.5 mg per 1.0 ml vaccine) from virus of the 6th and 102d passages grown from a single-layer cell culture under stationary

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USSR

SYUSYUKIN, A. A., et al, Veterinariya, No 5. May 71, pp 40-42

conditions was tested on guinea pigs. The vaccine from virus of the 6th passage was three times more effective than that from virus of the 102d passage. The LD<sub>50</sub> in the first case was 0.25 ml, that in the second case was 0.76 ml. In general, it was found that vaccine from virus of the earlier passages is more immunogenic than vaccine from virus of later passages.

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USSR

UDC 619.576.858.4:637

TSVETKOVA, S. A. and SOBKO, A. I., All-Union Foot-and-Mouth Disease Scientific Research Institute

"Detection of Foot-and-Mouth Disease Virus in Animal Slaughter Products"

Moscow, Veterinariya, No 1, 1972, pp 35-36

Abstract: Dependable detection of foot-and-mouth disease virus is largely related to the way the material is prepared for examination, chiefly the method used to purify and concentrate the virus in the substrate. The use of freon 113 (which promotes dissociation of virus antibody complex) to eliminate ballast proteins in suspensions from organs and tissues of infected animals was tested and polyethylene glycol was used to concentrate the virus by precipitation. Lymph nodes, bone marrow, thyroid tissue, lungs, heart, spleen, etc. obtained from cattle infected with foot-and-mouth disease virus and slaughtered in different stages of the disease were examined. Suspensions from these organs and tissues were purified and concentrated with freon 113 and polyethylene glycol and then titrated in suckling mice. Virus in these suspensions had higher infectious activity than virus in control suspensions from the same sources that were not purified and concentrated.

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USSR

T UDC 622.011.43

POTRASHKOV, G. D., TSVETKOVA, S. G.

"Brief Technical Recommendations for Calculating and Increasing the Stability of Sides of Pits in Ice-Saturated Disperse Deposits"

Temat. sb. Vses. n.-i. in-t gidrogeol. i inzh. geol. (Subject Collection of the All-Union Scientific Research Institute of Hydrogeology and Engineering Geology), 1969, Vyp. 22, pp 5-22 (from RZh-Mekhanika, No 3, March 1970, Abstract No 3V657)

Translation: Possible deformations of frozen and thawing disperse rock in sides of open-cast pits were examined and measures to reduce them were proposed. In working formulas emphasis is placed on cryogenic characteristics of rock that determine their stability on slopes. Resume

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USSR

UDC 669.187.26:669.018.298

ZIMINA, L. N., Candidate of Technical Sciences, TSVETKOVA, V. K., Candidate of Technical Sciences, TOPILIN, V. V., Candidate of Technical Sciences, STEPANOV, V. P., Candidate of Technical Sciences, and KOSHELEVA, G. F., Engineer, Central Scientific Research Institute of Ferrous Metallurgy and Elektrostal' Plant

"Structure and Properties of the EP487 Alloy of Different Smelting Methods"

Moscow, Stal', No 6, Jun 71, pp 547-549

Abstract: On the correlation basis of structures and properties of the EP487 heat-resisting alloy produced in an open-arc furnace (OF) and subjected to electroslog or vacuum arc remelting (VR), it was found that VR must be considered the optimum smelting technology of this alloy. After VR, a spotted liquation is absent in the metal, which produces a stability of mechanical properties, the impact ductility increases in the temperature interval of hot pressure treatment, the contents of lead, oxygen, hydrogen, and nonmetallic inclusions decrease, and strength and plasticity properties at room temperature improve. The process of dispersion hardening of the alloy after VR begins at a 50% higher temperature, the  $\delta$ -phase separation takes place in a smaller temperature interval (700-850°C), and the carbide phase of the type  $Me_6C$  and

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USSR

ZIMINA, L. N., et al., Stal', No 6, Jun 71, pp 547-549

the intermetallic phase  $Me_7W_6$  are present in smaller quantities than in the  
OF metal. Five illustrations, eight bibliographic references.

2/2

Vacuum Tubes

USSR

UDC: 621.317.39:621.385.032

BERLIN, G. S., MOROZOV, G. G., ~~TSVETKOVA, V. V.~~, Moscow Vacuum Tube Plant

"A Triode Longitudinal-Control Mechanotron"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obrazttsy, Tovarnyye Znaki, No 7, Mar 72, Author's Certificate No 329372, Division G, H, filed 10 Jan 70, published 9 Feb 72, p 151

Translation: This Author's Certificate introduces: 1. A triode longitudinal-control mechanotron containing a fixed cathode and a movable system of electrodes. As a distinguishing feature of the patent, sensitivity is improved and the measurement range is extended by making the movable system in the form of an anode and grid securely fastened together by insulators, and electrically connected to the base of the device by flexible leads. 2. A modification of this mechanotron distinguished by the fact that provision is made for connection in a differential circuit by making the movable electrode system in the form of two pairs of anodes and grids fastened together and located on both sides of the cathode.

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Acc. Nr: **AP0052091**

Ref. Code: **UR0475**

PRIMARY SOURCE: **Vrachebnoye Delo**, 1970, Nr **2**, pp **92-94**

**FUNCTIONAL STATE OF THE LIVER IN PATIENTS WITH SYRINGOMYELIA**

**V. V. Tsvetkova** (Kiev)

Radioisotope studies revealed changes of the functional state of polygonal cells of the liver in patients suffering of syringomyelia.

It is suggested that lesions of the sympathetic and parasympathetic centers in patients with syringomyelia affect the work the internal organs.

REEL/FRA  
**19820629**

Single Crystals

USSR

UDC 621.315.592(088.8)

GORYUNOVA, N. A., ORLOV, V. M., SOKOLOVA, V. I., TSYBKOVA, YE. V., and  
SHPEN'KOV, G. V., Physicotechnical Institute imeni A. F. Ioffe

"Method of Preparing Copper-, Tin-, and Phosphorus-Base Single Crystals"

USSR Authors' Certificate No 252289, Cl. 12c, 2, (Pol<sup>d</sup>), filed 11 Jun 68,  
published 30 Jul 70 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 3G529)

Translation: The method of preparing Cu, Sn-, and P-base single crystals,  
for example  $Cu_4SnP_{10}$ , at high temperatures is unique in that, in order to  
obtain a semiconductor compound possessing photoelectric sensitivity in the  
IR region of the spectrum, the crystallization process is carried on from  
solution in an Sn melt, with charge components taken in the following ratios  
(wt.%): Cu 36.7-37.7, Sn 17-17.8, P 44.8-46. Phosphorus is taken with an  
excess of 1-1.5 wt.% as compared with calculations. The process is conducted  
at 1000-1050° for 1-1.5 hr with subsequent slow cooling at a rate of 20± 5  
deg/hr.

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1/2 036  
UNCLASSIFIED  
TITLE--ELECTRON SPIN ECHO TECHNIQUE FOR SPATIAL RADICAL DISTRIBUTION  
INVESTIGATION IN IRRADIATED SOLID SUBSTANCES: INFLUENCE OF LET, LINEAR  
AUTHOR--(02)-TSVETKOY, YU.D., RAITSIMRING, A.M.  
COUNTRY OF INFO--USSR  
SOURCE--RADIAL. EFF. 1970, 3(1-2), 61-4  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--ELECTRON SPIN, FREE RADICAL, ECHO, SULFURIC ACID, METHANOL,  
IRRADIATION EFFECT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--2000/2257  
CIRC ACCESSION NO--AP0125835  
STEP NO--UK/0000/70/003/01-/0061/0064  
UNCLASSIFIED

2/2 036

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125835

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MEASUREMENTS OF TRANSVERSAL RELAXATION TIMES IN THE 2 PULSE ELECTRON SPIN ECHO METHOD OF RADICALS TRAPPED IN ALPHA AND GAMMA IRRADIATED FORZEN SOLN. OF H SUB2 SO SUB4 AND IN MECH YIELDS INFORMATION ON SPATIAL DISTRIBUTION OF TRAPPED RADICALS. THE RESULTS TESTIFY TO THE ESSENTIAL INFLUENCE OF THE LET OF RADIATION ON THE NATURE OF SPATIAL RADICAL DISTRIBUTION AND CAN BE EXPLAINED ON THE BASIS OF THE SPUR AND TRACK MODEL. AV. DISTANCES BETWEEN RADICALS IN TRACKS AND SPURS, AND THE NO. OF RADICALS IN SPURS WERE CALCD. FROM RELASATION DATA. FACILITY: INST. CHEM. KINET. COMBUST., NOVOSIBIRSK, USSR.

UNCLASSIFIED

TSVETNOV, V. V.

Radioeng.

UDC 629.7.058.54.001

"Effect of the Type of Detection on the Statistical Properties of the Signal in an AM Radio Altimeter with Phase Modulation." V. V. Tsvetnov, *Radio Engng. Electron. Phys.*, 1977, No. 1, pp. 1-5. (Radio Engng. Electron. Phys., 1977, No. 1, pp. 1-5.)

UDC 629.7.058.54.001

30 JPRS 56143  
01 June 1977

"Statistical Error Analysis of AM Radio Altimeters with Phase Modulation." V. V. Tsvetnov, *Candidate of Technical Sciences, Institute of Radio Engineering and Electronics, Lenin Aviation Institute, Moscow, U.S.S.R.*, 1977, No. 1, pp. 1-5. (Radio Engng. Electron. Phys., 1977, No. 1, pp. 1-5.)

A study was made of the effect of the extent of the carrier's surface on the statistical properties of the signal in a phase radial altimeter with amplitude modulation and a constant envelope.

The altitude reading errors were analyzed. It was demonstrated that under certain conditions the phase information about the received altitude can be suppressed. There is 1 table, 13 illustrations and a 7-entry bibliography.

TSVETNOV, V.V.

Radio  
Engr

50: 3frs 56/43  
01 Nov. 1972

UDC 629.7.038.34.001

EFFECT OF THE TYPE OF DETECTION ON THE STATISTICAL  
PROPERTIES OF THE SIGNAL IN AN AM RADIO ALIGNMENT WITH PHASE RECOVERY

V. V. Tsvetnov

*Department of Technical Sciences*

Pages 1-10

This article is a continuation of reference [1], and it is devoted to the study of the effect of the type of detection on the statistical properties of the signal of an AM radio alignment with phase recovery.

Definition of Frequency Shifting of the Echo Spectrum

The problem of the best method of extracting information from a signal

reflected by an extended rough surface in of great interest also for phase AM-radio alignment (Figure 1) discussed in reference [1].

Several types of detectors (envelope, linear, quadratic and synchronous) are theoretically possible. According to reference [2] they can be considered in the form of multipliers of the echo  $y(t)$  with the high-frequency reference voltage  $u_r(t)$ .

For the coherent detector in Figure 1 the echo spectrum coinciding with modulation of one frequency  $F_0$  three bands is multiplexed with the carrier spectrum  $F_0$  of the investigating oscillation. The useful effect at the detector output (the band near the modulation frequency  $F_0$ ) is formed here as a result of the beats of the spectra shown in Figures 1,a and b by the carrier waves.

The statistical structure of the AM signal reflected from the extended surface is such that each of the bands (the middle band  $m$ , the upper side band  $u$  and the lower side band  $l$ ) has the nature of narrow-band noise as a result of the initial modulation, the field intensity of the noise, however, any three harmonics lying by the interval  $2F_0$  when respect to any of the partial frequencies in the  $2F_0$  (see [3]). This relation is the reason that the best signal at the detector output (Figure 1,c) and at the phase-locked loop (Figure 1,d) carries information about the attitude in spite of its noise nature.

GLORIA

TSVETNOV, V.V.

SO: JPRS 5643  
01 Jan 1972

UDC 629.7.050.56.001

STATISTICAL ERROR ANALYSIS OF AN ALTITUDE MEASUREMENT WITH PHASE MEASUREMENT

V. V. Tsvetnov, Candidate of Technical Sciences

Page 71-96

Introduction

In reference [1] a radio altimeter with amplitude modulation and phase measurement is described in which the information of the measured altitude in the phase difference of the modulated voltage of the transmitter and the demodulated reflected oscillation. For separation of the direct and reflected waves it is possible to use either complex selection of additional frequency modulation.

As a result of the finite difference of the antenna radiation pattern of the radio altimeter and the extended nature of the reflecting ground surface, a beam of scattered radio waves arrives at the receiving point. As a result, in any radio altimeter information is simultaneously present on the "range spectra" which leads to the occurrence of systematic and fluctuation altitude errors.

In phase radio altimeters, the range spectrum leads to the formation of a "phase spectrum" as a result of which phase fluctuations occur at the receiver input. As a result of the periodicity of the phase in the interval of its uniqueness zone (under certain conditions, the phase fluctuations become equidistant). The altitude reading is impossible in this case; that is, the altitude information has been suppressed.

In this article the factors affecting this phenomenon are discovered, and the altitude reading errors are analyzed for the above-mentioned radio altimeter with phase reading. The general mathematical principles from references [2, 3, 4] were used for the analysis.

Statement of the Problem. Initial Assumptions

The block diagram of the investigated radio altimeter is presented in Figure 1, and it is a special case of the generalized block diagram of Figure 3 from reference [3] of the autonomous radio device.

Radio  
engr.

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UNCLASSIFIED  
TITLE--STATISTICAL CHARACTERISTICS OF INERTIALESS PERIODIC PHASE  
PROCESSING DATE--03 OCT 70  
CONVERTERS -U-  
AUTHOR--(02)-TSVETNOV, V.V., PONOMAREVA, V.D.  
COUNTRY OF INFO--USSR  
SOURCE--KIEV, IZVESTIYA VUZOV SSSR-RADIOELEKTRONIKA, VOL 13, NO 2, 1970,  
PP 246-259  
DATE PUBLISHED-----70  
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., NAVIGATION  
TOPIC TAGS--FREQUENCY CONVERTER, PHASE SHIFT, ANGULAR DISTRIBUTION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1991/0148  
STEP NO--UR/0452/70/013/002/0246/0259  
CIRC ACCESSION NO--AP0110114  
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0110114

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PERIODIC PHASE CONVERTER IS DEFINED AS AN INERTIALESS NON LINEAR DEVICE PERFORMING A PARTICULAR TYPE OF PHASE DIFFERENCE DISTRIBUTION CONVERSION. THE ARTICLE CONSIDERS A METHOD FOR FINDING THE LAW OF DISTRIBUTION AND OTHER STATISTICAL CHARACTERISTICS AT THE OUTPUT OF THE PERIODIC PHASE CONVERTER WITH A SPECIFIED DISTRIBUTION LAW AT ITS INPUT. A SOLUTION IS FOUND FOR THE PROBABILITY DENSITY AT THE CONVERTER OUTPUT FOR A PARTICULAR PHASE DIFFERENCE INPUT. THE SOLUTION IS APPLIED TO SEVERAL SPECIFIC PROBLEMS.

UNCLASSIFIED

USSR

UDC: 621.391:519.2

TSVETNOV, V. V., Editorial staff of the journal "Radiotekhnika i Elektronika" of the Academy of Sciences of the USSR

"Generalization of the Single-Moment Statistical Theory of Single-Channel and Two-Channel Phase Systems"

Obobshcheniye odnomomentnoy statisticheskoy teorii odnokanal'nykh i dvukh-kanal'nykh fazovykh sistem (cf. English above), Moscow, 1970, 29 pp, ill. bibliography of four titles (No 2186-70 Dep.) (from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2A56 DEP)

Translation: An investigation is made of the statistical properties of the amplitudes and phases of an additive mixture of a harmonic signal and a specialized narrow-band stationary gaussian interference whose orthogonal components are correlated at coincident instants and have different initial times for the first two orders. Author's abstract.

1/1

USSR

TSVETNOV, V. V. and PONOMAREVA, V. D.

UDC 621.391

"Statistical Characteristics of Inertialess Periodic Phase Converters"

Kiev, Izvestiya Vuzov SSSR-Radioelektronika, Vol 13, No 2, 1970, pp 246-259

**Abstract:** The periodic phase converter is defined as an inertialess non-linear device performing a particular type of phase difference distribution conversion. The article considers a method for finding the law of distribution and other statistical characteristics at the output of the periodic phase converter with a specified distribution law at its input. A solution is found for the probability density at the converter output for a particular phase difference input. This solution is applied to several specific problems.

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USSR

UDC: 681.327.12

FRIDMAN, G. Kh., TSVETOV, Ye. R., KARAMNOV, V. I., GALUSHECHENKO, V. V.,  
LOS', V. F.

"An Optical-Electronic Device for Pattern Recognition"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,  
No 32, Nov 71, Author's Certificate No 318967, Division G, filed 13 Apr 70,  
published 28 Oct 71, p 151

Translation: This Author's Certificate introduces an optical-electronic device for pattern recognition which contains a coherent light source, collimator, transparency with recognition and reference patterns, Fourier transform lens, spatial light modulator, and photomultiplier, all located along an optical axis. The photomultiplier is connected to the signal input of a high-frequency filter. The device also contains an electronic oscilloscope. As a distinguishing feature of the patent, speed is increased and interference suppression is improved by using a synchropulse light pickup, a control voltage oscillator, and a series circuit comprised of a wide-band amplifier and a signal envelope detector. The spatial light modulator is made in the form of a photographic film carrying a hologram of a variable-period lattice wrapped around a transparent thin-walled cylinder rotated by an

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USSR

FRIDMAN, G. Kh., et al., Soviet Patent No 318967

electric motor. The photomultiplier is fastened on a fixed base inside the rotating cylinder. In the base of the cylinder is an opening for the synchro-pulse light pickup, which is connected to the input of the control voltage oscillator and to one of the inputs of the oscilloscope. The output of the controlling voltage oscillator is connected to the controlling input of the high-frequency filter. The output of this filter is connected to the input of the wide-band amplifier, and the signal envelope detector output is connected to the other input of the oscilloscope.

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USSR

UDC 681.327.12

FRIDMAN, G. KH., and TSVETOV, YE. R.

"A Pattern Recognition Device"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 12, 1970, Author's Certificate No 267212, filed 4 Nov 68, p 125

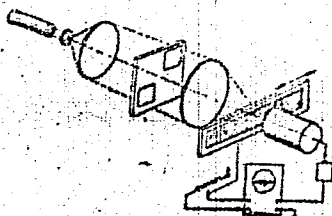
Abstract: This Author's Certificate introduces a pattern recognition device which contains a laser, an optical system, transparencies with the image to be studied and a master image, a lens which performs Fourier transformation, and a photoreceiver connected through a high-frequency filter to the vertical deflection input of an oscillograph. As a distinguishing feature of the patent, the dynamic range of output signals is extended, and the device is simplified by installing a spatial light modulator such as a movable transparent plate with variable line spacing in front of the photoreceiver in the focal plane of the lens and mechanically connecting this modulator to a potentiometric pickup which is connected to the horizontal deflection input of the oscillograph.

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USSR

FRIDMAN, G. KH., et al., Moscow, Otkrytiya, Izobreteniya,  
Promyshlennyye Obraztsy, Tovarnyye Znaki, No 12, 1970, Author's  
Certificate No 267212, filed 4 Nov 68, p 125



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USSR

UDC 615.272.6:547.466.64].015.45:612.128

VOLKOV, M. S., SHEMELEVA, L. T., and ~~TSVETOVA~~ TSVETOVA, G. M., Sverdlovsk Medical  
Institute

"Changes in Transaminase Activity in the Blood and Some Tissues After the  
Administration of Glutamic Acid Under Normal Conditions and After Hypoxia"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, No 4, 1971,  
pp 56-58

Abstract: Injection of healthy rats with glutamic acid (1 mg/g) had no effect on alanine and aspartate aminotransferase activity in blood serum, but it significantly increased the activity of both enzymes in the liver and thyroid. One hour's exposure to hypoxia (in a pressure chamber) significantly increased the activity of both enzymes only in serum, but had a slight effect on such activity in the tissues compared with the control. In rats given glutamic acid before they were placed in the pressure chamber, hypoxia significantly increased the activity of both transaminases in the liver. Enzyme activity also increased in serum and in the thyroid under the influence of glutamic acid, but the increase was significant only in the case of aspartate aminotransferase.

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Acc. Nr.

APC049765

Abstracting Service:

CHEMICAL ABST. 5-70

Ref. Code:

UR0495

101869g Standards for the strength of adhesive bonds of footwear bottoms. Ovechkis, E. S.; Tsvetfel, R. Sh.; Tsipenyuk, A. Ya. (USSR). *Kozh.-Obuv. Prom.* 1970, 12(1), 42-5 (Russ). The anal. of process control tests and field trials of several shoe factories resulted in proposing the following stds. for resin delamination strengths (S) between shoe uppers of natural leather and soles bonded together with adhesives (sole material, S in kg/cm given): leather and solid rubber, 9.0; porous rubber 10.0-12.0; porous rubber filled with fibers, 13.0; Stironip, 14.0. The above S values may be lowered by 1 kg/cm when synthetic leather is used for uppers. Low-grade molded or wholly adhesive-bonded shoes have S = 2.5 kg/cm.

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USSR

ZASHKVARA, V. V., TSVEYMAN, Ye. V., KORSUNSKIY, M. I., RED'KIN, V. S.

"Spectra of Characteristic Energy Losses for Electrons Reflected From Surfaces of La, Ce, Pr, and Nd"

Leningrad, Fizika Tverdogo Tela, Vol 14, No 6, Jun 72, pp 1812-1814

Abstract: Electron reflection spectra are studied for La, Ce, Pr, and Nd. The specimens were heated in a vacuum to temperatures close to their melting point to clean the oxides from the surface. Spectra of characteristic energy losses are given for a primary electron energy of 300 ev and specimen temperature of 850°C in the range of energy losses of 0-50 ev. The results are compared with inelastic scattering spectra obtained previously for Gd and Dy. It is found that the La spectrum is similar to that of Gd, but with a more complex structure at energies above 15 ev. The spectra of the other three lanthanons are similar to that of Dy. The La spectrum shows maxima at 5.3, 10.2, and 22.1 ev which are not observed in the spectra of Ce, Pr, and Nd. Comparison with the analogous spectrum for barium indicates that the most intense peaks, observed at 8-9 ev, may be the result of losses to excitation of volumetric plasma oscillations in the metals. Interpretation of the remainder of the spectra is less clear.

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USSR

UDC: 539.292

TSVEYMAN, Ye. V.; KORSUNSKIY, M. I., Academician of the Kazakh Academy of Sciences; ZASHKVARA, V. V., and RED'KIN, V. S.

"Auger Electron Spectra for Some Rare-Earth Metals"

Moscow, Doklady Akademii Nauk SSSR, vol 204, No 4, 1972, pp 828-830

Abstract: Because no spectra of Auger electrons for the rare-earth metals have as yet been made, the authors have developed them for elements Pr, Nd, Gd, Dy, Yb, La, and Hf in an energy range of up to 530 ev. All of the metal specimens, except the Hf, were of rolled film 0.3-0.5 mm thick. The Hf specimen was made of the powdered metal pressed and then sintered at a temperature of 1500° C in a  $2 \cdot 10^{-6}$  mm Hg vacuum for several hours. The excitation of the Auger electrons was done by an electron beam of 1-2 mA and 1.6 keV directed at right angles to the specimen surface, and the secondary electrons were recorded by an electrostatic energy analyzer of the cylindrical mirror type. The spectra of these metals is plotted and a table comparing the experimentally measured and the computed peak energies is presented. The authors are associated with the Institute of Nuclear Physics, Kazakh Academy of Sciences, Alma Ata.

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USSR

TSVEYMAN, Ye. V., RED'KIN, V. S., ZASHKVARA, V. V., KORSUNSKIY, M. I.,  
Institute of Nuclear Physics, Academy of Sciences of the Kazakh SSR,  
Alma-Ata

"Spectra of Characteristic Losses of Electron Energy in Gadolinium and  
Dysprosium"

Leningrad, Fizika Tverdogo Tela, Vol 13, No 9, Sep 71, pp 2793-2795

Abstract: The method of reflection of a primary electron beam from massive specimens is used to determine the spectrum of characteristic losses of energy in the rare-earth elements Gd and Dy. Measurements of the spectra for different primary electron energies in the 150-600-ev range were taken at scattering angles of 39 and 141° on an electrostatic  $\beta$ -spectrometer. Energy resolution of the instrument was 0.25 percent. The presence of oxide contaminants on the surface of the specimen was determined from the Auger peak of oxygen. It was found that when the specimens were heated to a temperature of about 1000°C in a vacuum of  $5 \cdot 10^{-6}$  mm Hg, there is a noticeable reduction in the intensity of this peak (more pronounced in Gd), which shows a considerable reduction in oxygen concentra-

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USSR

TSVEYMAN, Ye. V. et al., Fizika Tverdogo Tela, Vol 13, No 9, Sep 71,  
pp 2793-2795

tion on the surface of the specimens. The peaks which appear on the spectra are interpreted as energy losses due to excitation of plasmons on the surface of the metal, on the surface of the oxide, in the body of the metal, at the metal-vacuum interface, etc. Two figures, bibliography of six titles.

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USSR

RED'KIN, V. S., ZASHKVARA, V. V., KORSUNSKIY, M. I., TSVEYMAN, Ye. V.,  
Institute of Nuclear Physics of the Academy of Sciences, Kazakh SSR, Alma-Ata

"Energy Spectrum of Auger Electrons of Osmium Up to Energies of 300 ev"

Leningrad, Fizika Tverdogo Tela, No. 5, May 71, pp 1511-1513

Abstract: The spectrum of Auger electrons of osmium was obtained up to energies of 300 ev using an electrostatic energy analyzer of the cylindrical mirror type which had been used earlier to measure the spectra of characteristic energy losses of electrons in certain metals of the transition groups. The resolution of the spectrometer was 0.3%. A graph of the spectrum shows ten fairly well defined peaks located on the line of decreasing background intensity of the inelastically scattered electrons. It was established that the energy position of the observed peaks does not change with a change in the energy of the primary electron beam from 1 to 2.4 kev, thus making it possible to interpret the majority of the peaks as excitation of Auger transitions. A triplet of low intensity peaks in the energy range 260-240 ev is interpreted as *KLL* Auger transitions excited in residual carbon contamination of the surface of the sample. A group of

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USSR

RED'KIN, V. S., et al, Fizika tverdogo tela, No. 5, May 71, pp 1511-1513

peaks in the osmium spectrum with energies 153, 158, and 167 ev is interpreted as belonging to the  $NNN$  series of transitions. A table is given showing the experimental values of the energy of transitions of the  $NNN$  series increased by the magnitude of the work function for an electron from osmium ( $\sim 5$  ev), and these values are compared with energies calculated on the basis of tables of the energy levels in osmium. Peaks observed at 215 and 228 ev are interpreted as possible  $N_V N_{VI} O_V$  (221 ev) and  $N_{IV} N_{VI} O_V$  (238 ev). It was difficult to identify low-energy peaks at 9 and 21 ev, and these require additional study.

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USSR

UDC 546.791

KOVBA, L. M., and TSVIGUNOV, A. N.

"The Type of Superstructure in Phase  $UO_{2.6}$ "

Leningrad, Radiokhimiya, Vol 13, No 5, 1971, pp 789-790

Abstract: The investigation of the monocrystals of mixed uranium oxides with the O/U ratio of 2.615 was repeated. The crystals obtained were studied by the Laue methods. It was determined that the b subnucleus period increased by 13 times, and the c subnucleus period -- by 2 times. 52 uranium atoms comprise the nucleus, and the stoichiometric composition of the oxide should be formulated as  $U_{13}^{O_{34}}$  ( $UO_{2.615}$ ). Possible Fedorov groups are:  $D_{2h}^{17}$ ,  $C_{2v}^{12}$ ,

$C_{2v}^{16}$ ,  $Z=4$ .

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USSR

UDC 546.791

TSVIGUNOV, A. N., and KOVBA, L. M.

"Existence of the p-U<sub>3</sub>O<sub>8</sub> Phase"

Leningrad, Radiokhimiya, Vol 12, No 5, 1970, p 795

Abstract: The work of Steeb and Brucklacher was repeated and it was found that p-U<sub>3</sub>O<sub>8</sub> represents a mixture of two phases:  $\alpha$ -U<sub>3</sub>O<sub>8</sub> (basic) and  $\beta$ -U<sub>3</sub>O<sub>8</sub> (admixture). Appearance of the  $\beta$ -U<sub>3</sub>O<sub>8</sub>, which at atmospheric pressure has about a 0.5% larger volume than the starting material is due most probably to greater compressibility of  $\beta$ -U<sub>3</sub>O<sub>8</sub>. The conversions of  $\alpha$ -U<sub>3</sub>O<sub>8</sub> were studied in pressure range from 2000-8200 bar. The  $\alpha$ -U<sub>3</sub>O<sub>8</sub> samples held under pressure showed some additional lines which could be explained by doubling the C period. It is claimed that p-U<sub>3</sub>O<sub>8</sub> analogously to  $\delta$ -U<sub>3</sub>O<sub>8</sub> is not an independent modification of uranium oxide.

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USSR

UDC 546.791

TSVIGUNOV, A. N., KOVBA, L. M., Department of Inorganic Chemistry, Moscow State University imeni M. V. Lomonosov, Moscow, Ministry of Higher and Secondary Specialized Education RSFSR

"The Nature of  $\delta$ - $U_3O_8$ "

Moscow, Vestnik Moskovskogo Iniversitet, Seriya II, Khimiya, Vol 11, No 1, Jan/Feb 70, pp 59-61.

Abstract: Protracted heating of  $\alpha$ - $U_3O_8$  in air at 1350°C followed by slow cooling produces a powder and single crystals of the phase termed  $\delta$ - $U_3O_8$  having a rhombic lattice with parameters  $a = 6.70 \text{ \AA}$ ,  $b = 4.14 \text{ \AA}$  and  $c = 8.53 \text{ \AA}$ . An analysis of previously published data indicates that  $\delta$ - $U_3O_8$  is not a new modification of  $U_3O_8$  but is rather a mixture of the  $\beta$ -modification (basic phase) and the  $\alpha$ -phase (small amounts). The lattice parameters for  $\beta$ - $U_3O_8$  are  $a = 7.067$ ,  $b = 11.44$  and  $c = 8.29 \text{ \AA}$ . The respective parameters for the  $\alpha$ -modification are  $a = 6.705$ ,  $b = 11.93$  and  $c = 4.144 \text{ \AA}$ .

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USSR

UDC 620.172.254.05

BURNOS, V. A., TSVIKOVICH, S. I., SOLOMADINA, YE. A., and YANKOVSKIY, V. M.,  
All-Union Scientific Research and Engineering Design Institute of the Pipe  
Industry, Dnepropetrovsk

"Attachment for Tensile Testing Metals At Fast Strain Rates"

Moscow, Zavodskaya Laboratoriya, Vol 39, No 6, Jun 73, pp 755-756

Abstract: A special attachment has been developed at the All-Union Scientific Research and Engineering Institute of the Pipe Industry which when fitted to a K-117-Ye eccentric press allows tensile testing to be conducted at increased strain rates. Samples of steels 10, 20, 45, 30KhGSA, and 1Kh18N10T were tested using the new attachment and the results compared against tests conducted according to GOST 9651-61. The experimental strain rate was 20 c-l as compared to GOST 9651-61 with a strain rate of 0.005 c-l. No conclusions are given. A diagram of the unit is provided in the text. 1 figure, 1 table, 4 bibliographic references.

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Miscellaneous

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USSR

UDC 620.186:669.018.58

LIVSHITS, B. G., IZGORODIN, A. K., NIKOLAYEVA, V. N., TSVILING, M. Ya. and KLYCHEVA, V. A., Moscow Institute of Steel and Alloys  
"Study of the Kinetics of Gamma-Phase Formation in YuNDK35T5-Type Alloys at 830-900°C"

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, No 6, 1972, pp 65-66

Abstract: The study was conducted on cast alloys quenched to a mono  $\beta_2$ -phase from 1240°C. The quenched specimens were put through low-temperature isothermal treatment at 900, 870, 850, 840, and 830°C. The holding times for each temperature were 15, 25, 45, 60, and 180 min, respectively. The specimens were cooled in open air. The amount and kinetics of the phase separation were determined in 50 fields of vision by Glagolev's method. Titanium is shown to promote intensive  $\gamma_1$ -phase separation (up to 950°C), which is undesirable from the viewpoint of low-temperature treatment. Microstructural analytical data indicate that the reduction of Al content from 8 to 7% intensifies  $\beta_2 \rightarrow \gamma_1 + \beta_2$  transformation at all test temperatures. Noteworthy is the fact that the reduction of Al content to 7% markedly affects the decomposition kinetics at 900-870°C but much less at 840 and 830°C. The results of the study have shown that low-temperature treatment of YuNDK35T5 alloys must be conducted at minimum temperatures and minimum possible hold times. An increase in Ti

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USSR

LIVSHITS, B. G., et al., Metallovedeniye i termicheskaya obrabotka metallov,  
No 6, 1972, pp 65-66

contents and a reduction of Al contents inhibit low-temperature treatment.  
(1 table, 8 bibliographic references)

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USSR

UDC 621.789:620.186.1

(2)

LIVSHITS, B. G., ASTRAKHANTSEVA, N. A., IZGORCDIN, A. K., NIKOLAYEVA, V. N.,  
(DECEASED), KHLOMOV, V. S., and TSVILING, M. YA., Moscow Institute of Steel  
and Alloys

"Effect of Titanium on the Properties of the Beta- and Beta<sub>2</sub>-Phases and  
Brittleness of Annealed Alloys of the YuDK35T5 Type"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 8, Aug 73,  
pp 37-40

Abstract: The effect of titanium on the brittleness of type YuDK35T5 alloys  
in the equilibrium state at 770°C was studied, and hardness, chemical composi-  
tion of beta- and beta<sub>2</sub>-phases, and their effect on the failure process were  
determined. The four test samples contained (in wt %): 34-31 Fe, 15 Ni,  
8 Al, 35 Co, 4,5,6,7 Ti, and 4 Cu. The chemical composition of the phases is  
also given. Mechanical tests showed that as titanium content increases so does  
bend strength, percentage of cases of bending with cracks of the beta-phase,  
and percentage of cases of cessation of beta-phase precipitation, while decreases  
were noted for the number of secondary cracks in one sample, percentage of  
branch cracks, and beta-phase microhardness. The value of the critical tem-  
perature was determined for alloys YuDK35T5 and YuDK40T7 which has been  
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USSR

LIVSHITS, B. G., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov, No 8, Aug 73, pp 37-40

arc melted and annealed at  $770^{\circ}\text{C}$  for 2500 hours.  $T_{cr}$  was  $680^{\circ}\text{C}$  and  $700^{\circ}\text{C}$ , respectively. The effect of the  $\beta_1$ - and  $\beta_2$ -phases on alloy failure for the varying titanium content was explained in that in all the studied alloy samples a crack passes into the  $\beta_2$ -phase and bends the  $\beta_1$ -phase precipitate. With increased Ti content, the attempt of cracks to bend  $\beta_1$ -phase precipitates grows. In the alloy with 4% Ti, in 30 cases out of 100, cracks bend in their advancement of the  $\beta_1$ -phase, and in the alloy with 7% Ti, in 65 cases out of 100. Crack cessation occurs, as a rule, in the  $\beta_1$ -phase precipitations. This indicates that the  $\beta_1$ -phase is less brittle than the  $\beta_2$ -phase and that with increased Ti content the  $\beta_1$ -phase does a better job than the  $\beta_2$ -phase in hindering the advancement of a brittle crack. Three figures, two tables, five bibliographic references.

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USSR

UDC 669.018.2-13-15:539.26

LIVSHITS, B. G., NIKOLAYEVA, V. N., TSVILING, M. Ya. and YAKOVLEV, A. P.,  
Moscow Institute of Steels and Alloys

"Structure of YuNDK35T5BA Alloy Following Hot Forming and Heat Treating"

Moscow, Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya,  
No 3, 1972, pp 132-134

Abstract: The purpose of this study was to find a way of hot forming  
YuNDK35T5BA alloy without disrupting its initial grain orientation  $\langle 100 \rangle$ .  
The experiment involved specimens (with columnar crystals) of alloys of two  
compositions.

No. of Method of Alloy Melting		Co	Ni	Al	Cu	Ti	Nb	S	Ce	Fe
1	In vacuum	35.0	14.5	7.2	3.5	4.5	1.0	0.15	0.1	Remainder
2	In air	35.0	14.5	7.2	3.5	5.0	1.0	0.2	-	"

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LIVSHITS, B. G., et al., Izvestiya vysshikh uchebnykh zave eniy, Chernaya metallurgiya, No 3, 1972, pp 132-134

The microstructure of the specimens was examined following hot forming and heat treating at 810, 650, and 550°C. Both temperature and time specifications have been determined for the YuND35T5BA alloy to effect a single-phase state. The initial orientation  $\langle 100 \rangle$  appears to be adequately retained after complete treatment for high coercivity. (3 illustrations)

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LIVSHITS, B. G., IZGORODIN, A. K., NIKOLAYEVA, V. N., and OSVETNIK, M. Y.

"The Effect of Titanium on the Plasticity and Nature of Fracture of YuNDK35T5-Type Alloys"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 7, 1970, pp 116-119

Abstract: This article contains an investigation of YuNDK35T5-type alloys with 4, 5, 6, and 7% Ti. The microthermal emf and microhardness of the alloys were measured in the highly coercive state in order to determine the effect of titanium on liquation. The static transverse strength and elastic-plastic bending deflection were determined. Interferometric, fractographic, and microstructural studies were made of the fractured samples. Increasing the titanium content from 4 to 7% increased the degree of liquation in the alloy and the plasticity with respect to the grain body. Increasing the titanium content in YuNDK35T5-type alloys to 7% is expedient for simultaneous development of a method of improving the boundary state. An equation is derived for  $\sigma$  as a function of the titanium content in the form of a regression line.

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USSR

UDC 620.1.531.782

PISARENKO, G. S., TSVILYUK, I. S., Kiev

"Installation for Creep and Long-Term Strength Testing of Metals Under Deep Vacuum Conditions"

Kiev, Problemy Prochnosti, No 7, Jul 73, pp 108-110.

Abstract: The design and operating principle are described of a device allowing refractory metals and alloys to be tested for creep and long-term strength under deep vacuum conditions ( $1 \cdot 10^{-8}$  mm hg) at temperatures up to  $1400^{\circ}$  C. The creep and long-term strength characteristics of the alloy Nb-4.5W-2Ta, tested at  $1100^{\circ}$  C with various depths of vacuum ( $10^{-5}$ - $10^{-6}$  and  $10^{-8}$  mm hg) are compared.

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CSO: 1861-W

- END -

USSR

UDC 539.388.1

TSVILYUK, I. S., PYL'NIKOV, V. I., and MEN'SHIKH, V. A., Institute of Strength Problems, Ukrainian SSR Academy of Sciences (Kiev, Kaliningrad)

"Investigation of Some Characteristics of the Heat Resistance of Niobium Alloys 5VMTs, 5VMTsU, and 5VTTs at a Temperature of 1100°C"

Kiev, Problemy Prochnosti, No 11, Nov 73, pp 39-42

Abstract: The aim of the investigation is to establish the singularities of the resistivity of alloys 5VMTs, 5VMTsU, and 5VTTs to prolonged deformation and destruction, and on the basis of the mechanical characteristics to show, which of the indicated materials has higher heat-resistance characteristics.

Comparative results are presented of research on the long-term strength and creep characteristics of the above-named niobium alloys, obtained in a vacuum of  $10^{-5}$  torr at temperatures of 1100°C on the time basis of 3000 hours. Results of gas analysis of the tested specimens for oxygen content showed that essential saturation of the specimens with oxygen took place during the tests.

Comparative research on the heat resistance of the niobium alloys showed that alloys 5VMTs and 5VMTsU have greater heat-resistance characteristics

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TSVILYUK, I. S., et al., Problemy Prochnosti, No 11, Nov 73, pp 39-42

than does alloy 5VMTs, in spite of the fact that alloy 5VMTsU has a higher content of carbon and zirconium than does alloy 5VMTs.  
5 figures. 3 tables. 8 references.

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UDC 539.388.1

KRIVENYUK, V. V., TSVILYUK, I. S., PYL'NIKOV, V. I., Kiev, Kaliningrad.  
Institute of Strength Problems, Academy of Sciences, Ukrainian SSR,  
TSNIICHERMET (Central Scientific Research Institute of Ferrous Metallurgy  
imeni I. P. Bardin)

"The High-Temperature Creep and Long-Time Strength of the Niobium Alloy  
5VMTs"

Kiev, Problemy Prochnosti, No. 6, 1971, pp 54-59

Abstract: In spite of the extensive use of niobium-based alloys, little information is contained in the literature concerning the characteristics of their creep and long-time strength. The results of the tests described in the present article, on alloy 5VMTs (W-5.08 percent, Mo-2.2 percent, Zr-0.7 percent, O-0.021 percent, C-0.01 percent, N-0.008 percent) in the temperature range from 1,000 to 1,800 degrees C on the basis of 0.1 to 1,000 hours, in conjunction with results from similar tests on alloy VN-2, make it possible to expand somewhat the framework of phenomenological analysis of the particularities of the creep and long-time strength characteristics of niobium-based alloys. 5 figures, 2 tables, 11 references.

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1/2 019 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--REINFUSION OF BLOOD -U-  
AUTHOR--(02)-BELOGUROV, V.A., TSVIRKO, YE.A.  
COUNTRY OF INFO--USSR  
SOURCE--KHIRURGIYA, 1970, NR 6, PP 118-119  
DATE PUBLISHED--70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--BLOOD TRANSFUSION, INJURY, ABDOMEN, OBSTETRICS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3002/1785 STEP NO--UR/0531/70/000/006/0118/0119  
CIRC ACCESSION NO--AP0129153  
UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129153

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE PAPER DESCRIBES 22 BLOOD REINFUSIONS PERFORMED IN INJURY OF ABDOMINAL AND THORACIC ORGANS, DISTURBED ECTOPIC PREGNANCY. COMPLICATIONS ASSOCIATED WITH BLOOD REINFUSION WERE NOT OBSERVED. TWO PATIENTS DIED FROM CAUSES NOT ASSOCIATED WITH RETRANSFUSION OF BLOOD. THE AUTHORS DESCRIBE IN DETAIL THE TECHNIQUE OF BLOOD REINFUSION, AS WELL AS THE CONTRAINDICATIONS AND INDICATIONS. FACILITY: KHIRURGICHESKOYE OTDELENYE BOBRUYSKOY GORODSKOY BUL'NITSY, BELORUSSKAYA SSR.

UNCLASSIFIED

USSR

UDC 621.382.2

TSVIRKO, Yu. A., and SUMMAR, V. S.

"Gunn Oscillator in Resonant System With Low Q"

Elektron. tekhnika. Nauch.-tekhn sb. Mikroelektronika (Electronic Technology. Scientific-Technical Collection. Microelectronics), 1971, Issue 1(27), pp 114-120 (from RZh-Elektronika i yeye primeneniye, No 8, August 1971, Abstract No 8B135)

Translation: The dependence on the bias voltage of the oscillation frequency of a Gunn oscillator operating in a resonator contains a component that is linear with respect to a small value -- the inverse effective Q of the system. The results are presented of a measurement of the dependence of the oscillation frequency on the bias voltage for a Gunn semiconductor diode operating in resonant half-wave band systems with low Q. During generation at a mode with domain suppression by a low field, an increase of the voltage can give rise to a decrease of frequency.

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UDC: 621.382.029.6.001.5

TSVIRKO, Yu. A. and SUNMAR, V. S.

"Frequency of a Gunn Oscillator in a Low-Q Resonance System as a Function of the Bias Voltage"

Moscow, Radiotekhnika i elektronika, No. 11, 1970, pp 2423-2427

Abstract: In the Gunn diode, attention is usually directed to the increase in frequency of resonance modes caused by the reduction in capacitance of the force field domain with a variation in the bias voltage. When the diode is in a resonance system, the frequency is also a function of the effective Q. This brief communication considers both these effects, which result in only small frequency variations. The authors obtain an approximate solution for the oscillations of the diode in a tuned circuit in the form of a rapidly converging series expansion of the frequency in terms of Q. They describe experiments to investigate the frequency characteristics of Gunn diodes operating in a mixed resonance mode and in a mode with domain suppression by a low field in resonance systems made up of asymmetrical ribbon line segments with 20-30 ohm impedance. The laboratory specimens were electron GaAs, 85-125 mm thick, connected in parallel with half-wave line segments.

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1/2 019 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--HYSTERESIS EFFECTS DURING RETURNING OF THE OSCILLATION MODES OF A  
GUNN OSCILLATOR -U-  
AUTHOR-(C2)-IVANCHENKO, I.A., TSVIRKO, YU.A.  
COUNTRY OF INFO--USSR  
SOURCE--RADIOTEKHNIKA I ELEKTRONIKA, VOL. 15, JUNE 1970, P. 1320-1322  
DATE PUBLISHED---JUN70  
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.  
TOPIC TAGS--ELECTRIC HYSTERESIS, GUNN DIODE, GALLIUM ARSENIDE  
SEMICONDUCTOR, ELECTRONIC OSCILLATOR  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3C06/0300 STEP NO--UR/0109/70/015/000/1320/1322  
CIRC ACCESSION NO--AP0134104  
UNCLASSIFIED

272 019

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0134104

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. INVESTIGATION OF HYSTERESIS EFFECTS DURING RETUNING OF A GUNN OSCILLATOR CONSISTING OF AN N TYPE GAAS CRYSTAL CONNECTED IN SERIES WITH A BIAS SOURCE AND IN PARALLEL WITH AN LCR CIRCUIT. ATTENTION IS GIVEN TO THE RANGE OF EXISTENCE OF THE OSCILLATION MODE WITH DOMAIN DAMPING BY A LOW FIELD. CURVES SHOW HYSTERESIS EFFECTS IN THE FREQUENCY RESPONSE DURING BIAS VOLTAGE VARIATIONS AND CHANGES IN THE NATURAL FREQUENCY OF THE EXTERNAL CIRCUIT.

UNCLASSIFIED

USSR

UDC: 519.2

KOSYACHENKO, S. A., KUL'BA, V. V., TSVIRKUN, A. D.

"Analysis of Strategies of Organizing Computer Data Processing in the Presence of Random Malfunctions"

Sb. tr. In-t probl. upr. (Collected Works. Institute of Control Problems), 1972, vyp. 2, pp 82-86 (from RZh-Kibernetika, No 5, May 73, abstract No 5V274 by the authors)

Translation: Estimates are given of some strategies of organizing computer calculation with consideration of the presence of random malfunctions and operator errors. For each of the calculation strategies considered, estimates of the mathematical expectation are derived for the total time of solving the problem with and without separation into distinct stages, and expressions are found for determining the optimum number of stages to minimize the mathematical expectation of the overall time of calculation.

Solution of this problem is important for effective planning of the computational process in automated information

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KOSYACHENKO, S. A. et al., Sb. tr. In-t probl. upr., 1972, vyp. 2, pp 82-86 (from RZh-Kibernetika, No 5, May 73, abstract No 5V274)

systems characterized by distinct separation of physical and time resources for each of the problems which comprise the system.

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